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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/805,980

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Michael Long

87180RLO

1471

7590

01/18/2007

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EXAMINER

STOUFFER, KELLY M

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/805,980

Applicant(s)

LONG ET AL.

Examiner

Kelly Stouffer

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 20-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-9,11-15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 4,10 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 20 December 2006 have been fully considered but they are not persuasive.

The applicant argues that the amended limitation of when the fluidized stream of powder "contacts the first member such fluidized powder is vaporized." The belt of Okazaki et al., analogous to the first member of the claim, still meets this limitation as it is shown in Figures 5-7, because as the powder is contacting the belt, it is moved to a region where it is vaporized. In addition, Figure 5 shows a heater below the belt that causes the vaporization of the powder, so due to heat conductance one of ordinary skill in the art would recognize that the heater would heat the belt around where the powder contacts the belt as well, and surely not all vaporization occurs within in the zone right above the heater on the belt. But as the rejection is based upon the combination of Okazaki et al. in view of Li et al. it would be possible to replace the heated first member of Okazaki et al. (the belt) with the heated first member taught by Li et al. to control the particle size, film thickness, and uniformity, and increase the surface area for vaporization, as discussed in the previous office action. When these references are in combination, the powder is vaporized upon contact with the vaporization system of Li et al.

The applicant further argues that the size of the molecules exiting the porous disks of Li et al. are not controlled by the pore size. As was stated in the previous office

action, the plates have different pore sizes in Li et al. would control to degree the size of the particles exiting the plates.

Additionally, the applicant argues that one would not be motivated to combine Okazaki et al. and Li et al. The vaporization apparatus of Li et al. teaches advantages over the belt vaporization of Okazaki et al., as discussed above and in the previous office action. It is the examiner's position that although Li et al. teaches using atomized liquid in the vaporization apparatus, it is still vaporizing a material that is in a particle-like state similar to a powder.

The applicant further argues in the combination of Okazaki et al. and Li et al. in further view of Smith, Smith does not vaporize metered fluidized powder. However, Smith does teach the advantages of using a supercritical solvent when vaporizing powder as discussed in the previous office action. When in combination with Okazaki et al. that does teach vaporizing metered fluidized powder, the limitations of claim 2 are met.

Therefore, for these reasons the rejections of the previous office action are maintained, and are repeated here in their entirety.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 3, 5-9, 11-15 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent number 6291031 to Okazaki et al. in view of US Patent number 5835678 to Li et al.

Referring to claims 1, 8, and 14, Okazaki et al. includes a method for vaporizing organic materials onto a surface by providing fluidized organic powder, metering the powder, and directing the powder onto a first heated member where the powder is vaporized (column 8 lines 46-65). Okazaki et al. stresses that the goal of his invention

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is to minimize a phenomenon called splash by controlling particle size of the powder and to deposit a layer of controllable and uniform thickness on the substrate (column 2 lines 28-42 and column 5 lines 20-37). Okazaki et al. does not teach using a porous vaporization member with a set pore size in order to accomplish these goals. Li et al. teaches using a porous vaporization member with atomized solutions similar to fluidized powder that is heated and vaporizes the material passing through (column 11 lines 13-44). The vaporization plates of Li et al. additionally control the size of the particles exiting the plates (column 11 lines 44-62) and therefore create a uniform layer on a substrate with a controllable and precise quantity (abstract). Li et al. additionally uses the porous member to increase the surface area of vaporization of the particles (column 8 lines 55-65) and one of ordinary skill in the art would recognize that the belt of Li et al. forms a similar function of increasing the surface area of the member for vaporization. The atomizer of Li et al. also performs the function of creating particles of uniform size, (column 8 lines 20-28) much like the sieves and power dispersion apparatus of Okazaki et al. In addition, Li et al. includes a manifold between the heated vaporization plate 56 and reaction chamber interface 64 (the second member) as shown in Figure 2.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the procedure and apparatus of Okazaki et al. to include a liquid vaporizer system such as that taught by Li et al. in order to further control particle size, film thickness and uniformity, and increase surface area for vaporization.

With regard to claims 3, 7, 9, 13, 15 and 19, Okazaki et al. discloses equalizing the feeding and vaporization rate of the powder (column 4 lines 41-43) and Li et al.

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includes a temperature controlled nozzle for dispensing the material to be evaporated near the vaporization plates (column 10 lines 5-20).

With regard to claims 5, 11 and 17 Okazaki et al. shows the vapor directed towards a substrate in Figure 5, and Li et al. discloses the vapor to exit the vaporizer and travel to the substrate in column 11 lines 64-67.

With regard to claims 6, 12, and 18, Li et al. discloses the vaporization apparatus that includes the porous first member and second member to be uniformly heated with an encompassing heating jacket in column 10 lines 45-67.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki et al. in view of Li et al. as applied above, and further in view of US Patent number 4734451 to Smith. Li et al. includes in the claimed invention a method for depositing powders in a solvent (column 7 lines 32-44) then atomizing the material but does not include using a supercritical solvent. Smith teaches using a supercritical solvent to molecularize the material but also to use solvents with enhanced solvation properties in order to dissolve a wider variety of powders (columns 2 and 3 lines 65-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Li et al. to use a supercritical solvent when dissolving powders as taught by Smith to use solvents with enhanced solvation properties in order to dissolve a wider variety of powders.

***Allowable Subject Matter***

4. Claims 4, 10 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Okazaki et al. does not include a separate deposition chamber. Li et al. includes a separate deposition chamber but does not provide for stopping vaporization of the material to prevent contamination of the chamber. Therefore, these references, alone or in combination, do not meet the requirements of claims 4, 10 and 16.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer  
Examiner  
Art Unit 1762

kms



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**